

Amendments to the Claims

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

Claims 1-21 (Canceled)

Claim 22 (Currently Amended): An electrical impedance cell counting apparatus for counting and characterizing particles suspended in a liquid, comprising:

a housing with a mixing chamber and a collection chamber separated by a polymer membrane containing an orifice for passage of the particles between the mixing chamber and the collection chamber ~~for impedance determination of the particles~~, wherein a diameter of the orifice is in a range from 10 μm to 1,000 μm ;

electrodes within the mixing and collection chambers configured to provide pulses by impedance determination for counting the particles that pass through the orifice; and

a volume meter that determines a period during which a fixed volume of the liquid passes through the orifice.

Claim 23 (Previously Presented): An electrical impedance cell counting apparatus

according to claim 22, wherein the orifice has rounded edges at one of the sides of the membrane whereby perturbations of an electrical field at an orifice entrance are minimized and a substantially homogenous electrical field at the center of the orifice is provided.

Claim 24 (Previously Presented): An electrical impedance cell counting apparatus according to claim 23, wherein a radius of curvature of the rounded edges is substantially equal to $\frac{1}{4}$ th the diameter of the orifice.

Claim 25 (Previously Presented): An electrical impedance cell counting apparatus according to claim 22, wherein a surface roughness of an internal surface of the orifice is in a range from 0 μm to 5 μm , whereby a substantially homogenous electrical field at a center of the orifice is provided.

Claim 26 (Previously Presented): An electrical impedance cell counting apparatus according to claim 22, wherein the orifice diameter is in a range from 30 μm to 75 μm .

Claim 27 (Previously Presented): An electrical impedance cell counting apparatus according to claim 22, wherein the orifice diameter is 50 μm .

Claim 28 (Previously Presented): An electrical impedance cell counting apparatus according to claim 22, wherein a length of the orifice ranges from 1 μm to 1000 μm .

Claim 29 (Previously Presented): An electrical impedance cell counting apparatus according to claim 22, wherein the membrane is positioned in a single-use cartridge.

Claim 30 (Previously Presented): An electrical impedance cell counting apparatus according to claim 22, further comprising:

a bore in an outer surface of the housing for entrance of a liquid sample, communicating with

a sampling member positioned in the housing for sampling the liquid sample and having a cavity for receiving and holding the liquid sample, the sampling member being movably positioned in relation to the housing in such a way that in a first position the cavity is in communication with the bore for entrance of the liquid sample into the cavity, and in a second position the cavity is in communication with the mixing chamber for discharge of the liquid sample into the mixing chamber.

Claim 31 (Previously Presented): An electrical impedance cell counting apparatus according to claim 22, wherein deviation of the orifice diameter along a longitudinal axis

of the orifice ranges from +/- 1% to +/- 10%, whereby a substantially homogenous electrical field is provided at a center of the orifice.

Claim 32 (Previously Presented): An electrical impedance cell counting apparatus according to claim 22, wherein a largest cross-sectional dimension of the orifice is from 10 μm to 50 μm .

Claim 33 (Currently Amended): An electrical impedance cell counting apparatus for counting and characterizing particles suspended in a liquid, comprising:

a housing with a mixing chamber and a collection chamber separated by a polymer membrane containing an orifice for passage of the particles between the mixing chamber and the collection chamber ~~for impedance determination of the particles; and~~

electrodes within the mixing and collection chambers configured to provide pulses by impedance determination for counting the particles that pass through the orifice.

wherein a diameter of the orifice is in a range from 10 μm to 1,000 μm , and wherein a diameter of the particles is not greater than 60 percent of the diameter of the orifice.

Claim 34 (Previously Presented): An electrical impedance cell counting apparatus according to claim 33, wherein the orifice has rounded edges at one of the sides of the membrane whereby perturbations of an electrical field at an orifice entrance are minimized and a substantially homogenous electrical field at the center of the orifice is provided.

Claim 35 (Previously Presented): An electrical impedance cell counting apparatus according to claim 34, wherein a radius of curvature of the rounded edges is substantially equal to $\frac{1}{4}^{\text{th}}$ the diameter of the orifice.

Claim 36 (Previously Presented): An electrical impedance cell counting apparatus according to claim 33, wherein a surface roughness of an internal surface of the orifice is in a range from 0 μm to 5 μm , whereby a substantially homogenous electrical field at a center of the orifice is provided.

Claim 37 (Previously Presented): An electrical impedance cell counting apparatus according to claim 33, wherein the membrane is positioned in a single-use cartridge.

Claim 38 (Previously Presented): An electrical impedance cell counting apparatus

according to claim 33, further comprising:

a bore in an outer surface of the housing for entrance of a liquid sample, communicating with

a sampling member positioned in the housing for sampling the liquid sample and having a cavity for receiving and holding the liquid sample, the sampling member being movably positioned in relation to the housing in such a way that in a first position the cavity is in communication with the bore for entrance of the liquid sample into the cavity, and in a second position the cavity is in communication with the mixing chamber for discharge of the liquid sample into the mixing chamber.

Claim 39 (Previously Presented): An electrical impedance cell counting apparatus of claim 33, wherein the diameter of the particles is between 5 to 25 percent of the diameter of the orifice.

Claim 40 (Previously Presented): An electrical impedance cell counting apparatus of claim 33, further comprising a volume meter that determines a period during which a fixed volume of the liquid passes through the orifice.

Claim 41 (Previously Presented): A single-use disposable electrical impedance cell

counting cartridge for counting and characterizing particles suspended in a liquid, comprising a housing with a mixing chamber and a collection chamber separated by a polymer membrane containing an orifice for passage of the particles between the mixing chamber and the collection chamber for impedance determination of the particles, wherein a diameter of the orifice is in a range from 10 μm to 1,000 μm .

Claim 42 (Currently Amended): A single-use disposable electrical impedance cell counting cartridge of claim 41, further comprising a volume meter that determines for determining a beginning and an end of a period during which a fixed volume of the liquid passes through the orifice.

Claim 43 (New): An electrical impedance cell counting apparatus according to claim 22, wherein the volume meter comprises:

a volume metering chamber having an entrance connected to the collection chamber, and having a detector that detects liquid at the entrance and at an exit of the volume metering chamber.

Claim 44 (New): An electrical impedance cell counting apparatus according to claim 43, wherein the detector comprises an optical detector.

Claim 45 (New): An electrical impedance cell counting apparatus according to claim 43, wherein the detector comprises an electrical detector.

Claim 46 (New): An electrical impedance cell counting apparatus according to claim 33, wherein the volume meter comprises:

a volume metering chamber having an entrance connected to the collection chamber, and having a detector that detects liquid at the entrance and at an exit of the volume metering chamber.

Claim 47 (New): An electrical impedance cell counting apparatus according to claim 46, wherein the detector comprises an optical detector.

Claim 48 (New): An electrical impedance cell counting apparatus according to claim 46, wherein the detector comprises an electrical detector.

Claim 49 (New): A single-use disposable electrical impedance cell counting cartridge of claim 42, wherein the volume meter comprises:

a volume metering chamber having an entrance connected to the collection chamber, and having an exit, wherein the entrance and the exit of the volume metering

chamber are configured for detecting presence of the liquid at the entrance and at the exit.

Claim 50 (New): A single-use disposable electrical impedance cell counting cartridge of claim 42, further comprising electrodes within the mixing and collection chambers configured to provide pulses by impedance determination for counting the particles that pass through the orifice.